REPORT OF SANITARY SEWER OVERFLOW (SSO) INSPECTION

AT

The City of Bolivar, Missouri

345 S. Main Ave
P.O. Box 9
Bolivar, MO 65613

NPDES Permit No.: **MO0022373**

BY
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION VII

ENVIRONMENTAL SERVICES DIVISION
FIELD COMPLIANCE BRANCH

ON
SEPTEMBER 24, 25 AND 28, 2012

INTRODUCTION

At the request of the Water Enforcement Branch, Water, Wetlands and Pesticides Division, I performed a Sanitary Sewer Overflow (SSO) Inspection, at the City of Bolivar, Missouri on September 24, 25 and 28, 2012. The inspection was authorized by Section 308(a) of the Federal Water Pollution Control Act, as amended. To direct the inspection, a Sanitary Sewer Overflow (SSO) checklist was used that evaluates all important elements of the City's collection system (Attachment1). This narrative report presents the findings of the inspection.

PARTICIPANTS

City of Bolivar

- Darin Chappell, City Administrator
- Kimberly Strader, City Clerk
- Jerry Hamby, Public Works Director
- Joe Cornell, Supervisor, WWTP
- James Bradshaw, water/Sewer Department Supervisor
- Bob Allard, Water/Sewer Department
- Frank Thompson, Building Inspector

U. S. Environmental Protection Agency

1) Naji J. Ahmad, Environmental Engineer

PROCEDURES

I arrived at the Bolivar Wastewater Treatment Plant (WWTP) on September 24, 2012, at 9:00 a.m. I met with Messrs. Cornell, Hamby, Bradshaw and Allard. I introduced myself, presented my credentials and explained the purpose and procedures of the inspection. The procedures I used are documented in the Standard Operating Procedure (SOP) 2332.1B, NPDES Compliance Evaluation Inspection. These procedures included:

1. Completing the SSO inspection checklist (Attachment 1);
2. A check of the self-monitoring records (Attachments 3, 4, 5,6, 7 and 13);
3. Visually inspecting 9 lift stations (Attachment CD);
4. Completing the Biosolids Facility Inspection Form checklist (Attachment 15);

After a brief discussion of the City's collection system, I provided Messrs. Cornell, Hamby, Bradshaw and Allard with an overview of the Sanitary Sewer Overflow and the Biosolids checklists. Mr. Hamby indicated that the Water/Sewer Department staff members are responsible for the operation and maintenance of sewer lines and all lift stations, and the Wastewater Treatment Plant (WWTP) staff members are responsible for the operation and maintenance of the WWTP and managing the Biosolids Program.

I then started completing the SSO checklist and reviewing inspections and maintenance records of lift stations and WWTP DMRs. At the end of the day I informed Messrs. Cornell, Hamby, Bradshaw and Allard that I would return the next day and visually inspect the field where the City applies sludge and visually inspect the nine lift stations.

On September 25, 2012, I returned to the WWTP and met with Mr. Cornell. Mr. Cornell escorted me on a visual inspection of the field where the City land applies sludge (DSCN0595-DSCN0598). Soon after my return to the WWTP, Messrs. Bradshaw and Allard escorted me on a visual inspection of the nine (9) lift stations (DSCN0599-DSCN0649).

Later that day I returned to the WWTP and continued my review of some of the City files provided to me by staff. I also discussed with City staff the City's preventative maintenance procedures, procedures for handling sewer calls and procedures for reporting SSOs to the Missouri Department of Natural Resources. I concluded my physical inspection but scheduled the exit briefing for Friday September 28 to accommodate the schedule of City officials.

On September 28, I arrived at City Hall at 9:00 a.m. I met with Ms. Strader and Messrs. Chappell, Cornell, Hamby, Bradshaw, Allard and Thompson and held a formal exit meeting. I discussed my preliminary inspection observations and findings of the collection system and the Biosolids Management Program. I included twelve (12) findings in the Notice of Potential Violation (NOPV), and reminded them of the purpose of the NOPV (Attachment 9). Mr. Chappell signed the NOPV and kept a copy.

On October 12 I received, via U.S. mail, a response to the September 28, 2012, NOPV from the

City of Bolivar (Attachment 10).

COMMUNITY

According to City staff, there are 10,325 people living within the Bolivar city limits. The City has a total area of 8.3 square miles.

According to the information provided by city staff, the collection system service area is approximately 6.27 square miles. The City has 3,473 residential service connections and 467 commercial connections (Attachment 12).

The Public Works Department has the responsibility to administer all 77.06 miles of sewer lines and the nine (9) lift stations. According to Mr. Hamby, the City has dedicated 3 full time employees (FTEs) to the WWTP, 2.25 FTEs to sewer lines and 2.25 FTEs to the 9 lift stations.

According to Mr. Hamby, the City receives citizens' complaints at City Hall; City Hall then communicates such calls to the Staff of the Public Works Department.

FACILITY DESCRIPTION

Waste Water Treatment Plant (WWTP)

The City's sanitary sewage is treated by the WWTP. This treatment plant is owned and operated by the City. According to the NPDES permit, the WWTP has an average daily flow of 1.4 million gallons per day (MGD) and a wet weather flow of 2.55 million gallons per day. The WWTP receives wastewater from nine lift stations in the collection system into the plant's headworks where there is a bar screen with grit removal. According to the NPDES permit, the WWTP is equipped with 3 pumps at the headworks, bar screen with grit removal, two 1.0 MGD/1.4 MGD aeration basins, two 70 feet in diameter secondary clarifiers and 5 aerobic tanks. The plant has a sludge production design of 533 dry tons per year. Effluent discharges into the Town Branch of Piper Creek.

Lift Stations

The City owns and operates 9 lift stations (Attachment 1). These stations are designed to transfer the collected wastewater to the WWTP. All lift stations are equipped with hourly meters. Lift Stations #1 and #8 have permanent on-site auto-transfer electric generators; lift stations #2, #4 and #5 have on-site manual transfer electric generators; lift stations # 7 and #9 have two sources of power; and the smaller lift stations such as #3 at the Girl Scout camp and #10 at the ball park have no sources of back-up power. All lift stations are equipped with two pumps.

Sewer lines

According to City staff, the City of Bolivar has 3,940 connections to the collection system. The system has approximately 77.06 miles of sewer lines. Of those 77.06 miles, 2.22 miles are force main lines. Approximately 74.77 miles of the gravity sewer are 8-18 inches in diameter, 0.08

mile are less than 8 inches in diameter. All force main lines are less than 8 inches in diameter. Approximately 36.37 miles are made out of Vitrified Clay Pipe (VCP), and 38.47 miles are made out of plastic. Approximately 0.4 mile of force main line is made of VCP, 0.01 mile is made of cast iron and 1.81 miles are made out of plastic. The age of the sewer lines is unknown to the City. There are approximately 1,541 known manholes in the collection system.

Biosolids Program
According to the 2011 sludge report sent to MDNR, the City generated 188.83 tons of sludge from the aerobic process. All sludge is surface land applied over 14 sites totaling 400 acres. Applied sludge has 3.4 percent solids. The plant has a sludge storage capacity of 140 days. If there is a problem with sludge handling, the City would truck-haul its sludge approximately 30 miles to the Springfield WWTP (Attachment 15).

FINDINGS AND OBSERVATIONS

Based on my interviews with City personnel, visual observation of facilities and based on my review of records provided to me by City personnel during my inspection, I issued twelve (12) Notices of Potential Violation for improper management and maintenance of the collection system. These observations were discussed with City staff members during my inspection and when I concluded my inspection on September 25, 2012. However, I conducted the formal exit meeting on September 28, 2012 and the following observations were discussed with the City Administrator and City staff members during the formal exit meeting. The City also contacted me on the evening of September 26, and on the evenings of September 26 and 27, 2012. Mr. Allard hand delivered to me a completed SSO check list and copies of 2008-2012 records of call outs, routine cleaning of sewer lines, spot repairs, smoke testing, manhole inspections, and lift station inspections and maintenance to my hotel. However, I was not able to review these extensive records until I returned to my office and thus the NOPV findings observed are based on my findings of September 24 and 25 without the benefit of those records.

1. According to Mr. Cornell, the City has yet to complete the Capacity, Management, Operation and Maintenance (CMOM) Self Assessment.
2. All lifts stations are equipped with the SCADA system with the exception of lift station # 10 located at the Girls Scout camp. Mr. Bradshaw indicated that during routine inspection of lift stations, staff members inspect the pumps, electrical circuit board, alarm, and hourly meters. The city performs maintenance on all lift stations as needed (Attachment 6).

3. During my visual inspection of lift stations, I noticed the following issues:

   a) Lift station #10 (DSCN0599-DSCN0606) has structural issues. The steel structure is rusted and it appeared to have been neglected for an extended period of time as shown in DSCN0604 below.
   b) Lift stations #1 (DSCN0631-DSCN0637), #4 (DSCN0617-DSCN0621), #7 (DSCN0612-DSCN0616) and # 2 have significant grease accumulation as shown in DSCN0634

DSCN0604, Lift station #10 has structural issues.

DSCN0634, Lift station # 1, with Significant Grease Accumulation.

c) Lift stations #1 (DSCN0631-DSCN0637), #4 (DSCN0617-DSCN0621), #7 (DSCN0612-DSCN0616) and # 2 have significant grease accumulation. **Therefore, for items 2.a. 2.b. and 2.c., I issued Notice of Potential Violation (NOPV) #8 for the City's failure to properly clean, maintain, and provide sound structure to its lift stations.**

d) Lift stations #3 and #10 have no alternative back-up power. In addition, lift station #10 is not connected to the SCADA system. It is equipped with a red flashing light alarm (DSCN067-DSCN0611) but has no call-in sign. **Therefore, I issued NOPV#9 for failure to provide alternative backup power and an adequate alarm system.**

e) During my visual inspection of lift stations, Mr. Bradshaw mentioned that lift Station #2 had an issue with paper towels causing problems for the pumps. The source of towels is the Surgery Center. The lift station also receives discharges from the Cancer Center and CMH Uniform Company. This lift station also has significant grease problem caused by (according to City staff) those industries. **Therefore, I issued NOPV#11 for failure to adequately prevent such facilities from causing grease accumulation or other substances in lift stations which may cause damage.**

f) During my visual inspection of lift station #5, I noticed that across the waterway there was a manhole that, according to Mr. Bradshaw and Mr. Allard, had overflows in the past during wet weather events (DSCN0644-DSCN0645). This manhole is located at the bottom of a small hill and it was below grade which is an ideal situation, during wet weather events, to receive inflow and infiltration from the lid as shown in DSCN0645 below.

DSCN0645, manhole near lift station #5, this manhole is at the bottom on the hill.

This manhole also was connected in series with another manhole which increases the flow coming in versus the flow going out significantly during wet weather (bottle necking). It appeared that the City knew about this specific location and its issues (and other locations with similar issues) but did not take the appropriate measures to correct it. **Therefore, I issued NOPV#10 for failure to adequately measure hydraulic capacity of such situations and take appropriate corrective measures to eliminate these issues.**

4. During my visual observation of the lift stations, Mr. Bradshaw indicated that the City used to conduct daily inspections at all lift stations. However, in 2012 the City lowered the frequency of inspection to only Monday and Friday of each week.

5. The following violations are based on the requirement of the revised October 1, 1980 STANDARD CONDITIONS FOR NPDES PERMITS **NO. MO0022373**; PART I - SECTION A - MONITORING AND REPORTING, Item 3. **Facilities Operation:** which reads "*Permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions. Operators or supervisors of operations at publicly owned or publicly regulated wastewater treatment facilities shall be certified in accordance with 10 CSR 209.020(2) and any other applicable law or regulation. Operators of other wastewater treatment facilities, water contaminant source or point sources, shall, upon request by the Department, demonstrate that wastewater treatment equipment and facilities are effectively operated and maintained by competent personnel*".

6. During the my inspection, City personnel were not able to identify interdepartmental (systematic) procedures to handle citizen complaints regarding sanitary sewer issues and properly report them to MDNR if they result in overflows in a timely manner as required by the NPDES permit. **Therefore I issued NOPV#1 for failure to establish systematic procedures (written) to receive, document and track sewer complaints and communicate such complaints with the appropriate staff members at the Wastewater/Sewer Department to adequately respond and correct a sewer issue(s) especially if they caused and resulted in basement backups and Sanitary Sewer Overflow (SSO).**

7. The City has no written procedures for cleaning or maintaining its collection system. **Therefore I issued NOPV#2 for failure to establish procedures, policies and programs to administer the collection system.**

8. As part of proper maintenance and knowledge of its collection system, the WWTP staff and Sewer Department staff members I met with during my inspection should have been able to identify the physical characteristics of the sewer lines. **Therefore, I issued NOPV#3 because the City failed to provide me with the complete physical characteristics of its collections system, especially accurate length, age, material and size of both sanitary force main and gravity sewer lines at the time of my inspection.**

9. During my inspection, City staff mentioned that the City does not perform preventative maintenance on its collection system. In addition, based on my visual observation of lift stations, it is apparent that the City is doing a poor job cleaning its collection system. **Therefore, I issued NOPV#4 for the failure to perform preventative maintenance.**

10. City staff mentioned that they do clean some sewer lines due to blockages and complaints. However, at the time of my inspection, they were not able present the footage of sewer cleaned during the past five years. **Therefore, I issued NOPV #5 because the City of Bolivar failed to clean and/or document the footage of sanitary sewer lines cleaned in the past five years.**

11. Based on my discussions and conversation with City personnel regarding time spent on administering the collection system, it appears that the City of Bolivar is not dedicating the appropriate funding and number of trained staff to administer the 9 lift stations and maintain the 77 miles of its sanitary sewer lines. The City dedicates 2.25 full time employees (FTE) to inspect and administer the 77 miles of sanitary sewer lines, 2.25 FTE to inspect and maintain all lift stations and 3 FTEs to the wastewater treatment plant. **Therefore, I issued NOPV#6 for failure to provide the appropriate number of competent personnel to maintain its collection system.**

12. It appears that the City, over the past few years, has identified several areas or specific locations as areas with I/I problems. However, the City did not consider those areas as priority areas and did not take the appropriate measures to fix those problems and eliminate the I/I which caused the WWTP's flow to increase significantly during wet weather events. For instance, in 2012, flow at the WWTP quadrupled after a 2.3 inch rain event in the month of March (4.56 MGD), and after a 1.2 inch rain event in April (4.447MGD). This resulted in allowing untreated wastewater to bypass into the Town Branch of Piper Creek. **Therefore, I issued NOPV#7 for the City's failure to take the necessary measures to minimize and eliminate sources of I/I and minimize the volume of untreated sanitary sewer reaching water of the U.S.**

13. As mentioned above, the City was not able to provide me with information and records needed to complete the SSO checklist during my inspection. However, the City provided me several records, dating back to 2008 on the evenings of September 26 and 27, as a response to my observation included in item 11 above (NOPV# 5) and item 9 above (NOPV #3). The records provided to me by the City on the evenings of September 26 and 27 were not organized or structured and required extensive investigation and review upon my return to my office. The following is a summary of tasks appeared to have been completed over the last several years:

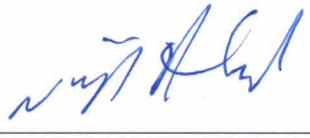
    a. Cleaned 12.7 miles of sewer lines in 2008 (Attachment 3A)
    b. Cleaned 12.0 miles of sewer lines in 2009 (Attachment 3B)
    c. Cleaned 18 miles of sewer lines in 2010 (Attachment 3C)
    d. Cleaned 12.4 miles of sewer lines in 2011 (Attachment 3D)
    e. Cleaned 6 miles of sewer lines in 2012 (Attachment 3E)
    f. Conducted 7 spot repairs in 2011 (Attachment 4A)
    g. Conducted 20 spot repairs in 2012 (Attachment 4B)
    h. Smoke tested 6 locations in 2011 (Attachment 5A)
    i. Smoke tested 8 locations in 2012 (Attachment 5B)
    j. Responded to 21 calls in 2012 (Attachment 3A)
    k. Inspected several manhole sin 2012 (Attachment 7)
    l. 22 SSOs and 14 bypasses in 2008 (Attachment 13)
    m. 37 SSOs and 7 bypasses in 2009 (Attachment 13).

n. 37 SSOs and 16 bypasses in 2010 (Attachment 13).
o. 14 SSOs and 12 bypasses in 2011 (Attachment 13).
p. 12 SSOs and 8 Bypasses in 2012 (Attachment 13)

14. Based on my conversation with City personnel during my inspection, it appeared that after the departure of the previous Public Works Director, the City stopped maintaining appropriate records and procedures, and does not have a comprehensive understanding of managing the collection system and taking the necessary measures in eliminating its problems. Records after the departure of the previous director are no longer computerized and lack adequate documentation. It also appeared that staff members at the WWTP have the understanding that allowing untreated or partially treated sewage to bypass treatment is a somewhat normal practice, and in fact, their solution to the inflow and infiltration problem in the collection system.

15. The requirement of the revised October 1, 1980 STANDARD CONDITIONS FOR NPDES PERMITS NO. MO0022373; PART I -SECTION A - MONITORING AND REPORTING, Item 2. **Noncompliance Notification states:**

    a. *If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Department with the following information, in writing within five (5) days of becoming aware of such conditions: (i) a description of the discharge and cause of noncompliance, and (ii) the period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge. b. Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally with 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided with five (5) days of the time the permittee becomes aware of the circumstances. The Department may waive the written report on a case-by case basis if the oral report has been received within 24 hours.* Based on my discussion with City staff, it appears that the City may have failed to report all actual SSO occurrences especially during high flow events (NOPV#12).



Naji J. Ahmad
Environmental Engineer
ENSV/EFCB
January 17, 2013

Attachments:

1. Sanitary Sewer Overflow (SSO) Checklist (7 pages)
2. 1 Photo CD

The following attachments were sent directly to the Compliance Officer due to the volume of records.

3. City Map (1 page)
4. 2008-2012 sewer maintenance records (108 pages)
5. On the spot repairs , 2008, 2009, 2011 and 2012 Reports (193 Pages)
6. Smoke testing in 2012 and 2011 (65 pages)
7. Lift stations daily inspection records (243 pages)
8. Manholes inspections (127 Pages)
9. Sewer budget (35 pages)
10. October 28, 2009 NOPV (1 page)
11. City Response to NOPV (26 pages)
12. Commercial connections (55 pages)
13. 2012 sewer call ins (162)
14. SSOs and Bypasses (206)
15. MDNR NOV (6 pages)
16. Biosolids Checklist and 2011 report (32 pages)
17. Sewer maps (2 large maps)

Photo Log

DSCN0595-DSCN0598	land application site
DSCN0599-DSCN0606	lift station #9
DSCN0607-DSCN0611	lift station #10
DSCN0612-DSCN0616	lift station #7
DSCN0617-DSCN0621	lift station #4
DSCN0622-DSCN0624	lift station #8
DSCN0625-DSCN0630	lift station #2
DSCN0631-DSCN0637	lift station #1 grease
DSCN0638-DSCN0643	lift station #5
DSCN0644-DSCN0645	manhole below grade causing I&I and resulting in LS#5 to overflow
DSCN0646-DSCN0649	lift station #3
DSCN0699-DSCN0717	manholes
DSCN0718-DSCN0723	CTV and Jet/Vac.